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Road Load Coastdown Testing of Twenty-Seven 1984 and 1985 Model Year Light-Duty Vehicles and Light-Duty Trucks

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Technical Report

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16. ABSTRACT

Twenty-seven 1984 and 1985 model year light-duty vehicles and light-duty trucks were tested to determine the force required to overcome the sum of aero-dynamic drag, tire rolling resistance and other frictional losses. The primary purpose of this testing was to compare the results from production vehicles with information submitted by the manufacturers for the Environmental Protection Agency's (EPA) emission certification and fuel economy programs.

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INTRODUCTION:

This report presents coastdown test results on 27 1984 and 1985 Model Year production vehicles. Some vehicles were procurred by EPA's contractor, Transportation Research Center of Ohio (TRC), some were provided by their manufacturers. Testing was performed by both TRC and manufacturers, some vehicles were tested at more than one facility. This aspect of the test program was identical to programs run previously. For further information the reader should consult last years report: Road-Load Coastdown Testing of Selected 1981 thru 1984 Model Year Light-Duty Vehicles and Light-Duty Trucks, EPA AA-CD-84-01. In addition to the coastdown testing, several vehicles were evaluated to determine the dynamometer setting which would reproduce the 55 to 45 mph time from the coastdown test. The dynamometer procedure is described in the Office of Mobile Sources Advisory Circular No. 55B, as is the coastdown procedure.

RESULTS:

The test vehicle fleet is described in Table 1. Vehicles numbered 1 through 24 were tested in previous programs and are not included in this report. Coastdown test results are set forth in Table 2, dynamometer adjustments for selected vehicles are found in Table 3. Several vehicles did not meet specifications set forth in the manufacturers application for emission certification. This report does not address the details of any discussions that have occured or of any enforcement actions which are contemplated. EPA plans to continue production vehicle coastdown testing in the future.

TABLE 1

TEST VEHICLES

No.	Year	Manuf.	Model	Body Style	Odometer	(2) Weight	Engine	Trans-mission	Tires	Pressure Front/Rear	Vehicle Source
25	1984	Ford	Escort	3-Dr. Hatch	16,144	2180	1.6 L	A3	Fire. WR 165/80R13	35/35	EPA
26	1984	Ford	LTD	4-Door	10,927	3070	3.8 L	A3	Fire. 721 P185/75R14	30/35	EPA
27	1984	Ford	Tempo	4-Door	5,380	2600	2.3 L	A3	Fire. WR P175/80R13	30/30	EPA
28	1984	Ford	Ranger	Pickup	6,063	2650	2.0 L	M5	Fire. Dlx. Champ. P185/75R14	35/35	EPA
29	1984	GM	Monte Carlo	2-Door	4,218	3350	5.0 L	A3	UniR. Tig. Paw 195/75R14	35/35	EPA
30	1984	GM	Camaro	2-Door	3,592	3100	2.8 L	A3	UniR. ER P205/70R14	35/35	EPA
31	1984	GM	Chevette	4-Door	4,826	2140	1.6 L	A3	Fire. Dlx. Champ. P155/80R13	30/30	EPA
32	1984	GM	Cavalier	2-Door	3,478	2460	2.0 L	A3	Fire. Dlx. Champ. P175/80R13	35/35	EPA
33	1984	Toyota	Corolla	2-Door	7,128	2300	1.6L	M5	Bridg. Wide 70 185/70SR13	27/27	EPA
34	1984	GM	Blazer	2WD	4,856	3270	2.8 L	A4	Good. P205/75R15	35/35	EPA
35	1984	GM	Celebrity	4-Door	1,810	2900	2.8L	A3	Gen. Ameri-Way P185/80R13	35/35	EPA
36	1984	Honda	CRX	2-Dr. Hatch	22,218	1760	1.3 L	M5	Dunlop SP4N P165/70R13	35/32	EPA
37	1984	Ford	Crown Vic.	4-Door	9,551	3830	5.0 L	A3	Mich. X P215/75R14	31/35	EPA
38	1984	Ford	LTD	4-Door	10,006	3100	3.8 L	A3	Fire. WR-12 P185/75R14 M/S	30/35	EPA
39	1984	Ford	Marquis	4-Door	14,053	3090	3.8 L	A3	Fire. WR-12 P185/75R14	30/35	EPA
40	1984	GM	Chevette	4-door	5,633	2150	1.6 L	M4	Gen. Jet P155/80R13	30/30	GM
41	1984	Ford	Thunderbird	2-door	20,060	3120	3.8 L	A3	Gen. Ameri-Way XT P195/75R14	30/30	EPA
42	1984	GM	S. Blazer	2WD	3,422	3280	2.8L	A4	Goodyear P205/75R15	35/35	GM
43	1984	GM	S. Blazer	2WD	4,767	3240	2.8L	M5	Goodyear P205/75R15	35/35	GM
44	1984	GM	Chevette	4-door Hatch	4,858	2290	1.6L	A3	Gen. Jet P155/80R13	30/30	GM
45	1984	GM	Chevette	4-door Hatch	6,302	2290	1.6L	A3	Uniroyal P155/80R13	30/30	GM
46	1984	GM	Chevette	2-door Hatch	6,772	2230	1.6L	A3	Uniroyal P155/80R13	30/30	GM
47	1984	GM	Chevette	4-door Hatch	3,593	2310	1.6L	A3	Fire. P175/70R13	30/30	GM

TABLE 1 (cont'd)

TEST VEHICLES

No.	Year	Manuf.	Model	Body Style	Odometer	(2) Weight	Engine	Trans-mission	Tires	Pressure Front/Rear	Vehicle Source
48	1984	Ford	LTD	4-Door	4,059	3134	3.8L	A4	Fire. P185/75R14	30/35	Ford
49	1985	Ford	LTD	4-Door	589	3170	3.8L	A3	Fire. P195/75R14	30/30	Ford
50	1985	Ford	LTD	4-Door	593	3145	3.8L	A3	Fire. P195/75R14	30/30	Ford
51	1985	Ford	LTD	4-Door	593	3160	3.8L	A3	Fire. P195/75R14	30/30	Ford

1. Vehicles "numbered" 1 throught 24 were tested in previous years.

2. No driver, with all instrumentation, 5th wheel down and off scale.

MANUFACTURER SUPPLIED VEHICLE

CROSS REFERENCE

EPA Vehicle Number	Manufacturer Vehicle Number
40	4T508
42	SU4046
43	SU4001
44	1T583E
45	4T506
46	4T510
47	4T519
48	P854a01z
49	P421a01z
50	P422a01z
51	P431a01z

TABLE 2
COASTDOWN TEST RESULTS

No.	Year	Manufacturer	Model	Inertia Wt. Class	(1) Location	Track Coastdown Time Application	Vehicle	(2) % Difference
25	1984	Ford	Escort	2750	TRC	15.86	15.65	1.3
26	1984	Ford	LTD	3500	TRC	18.12	15.50	16.90
27	1984	Ford	Tempo	3000	TRC	17.25	15.88	8.6
28	1984	Ford	Ranger	3375	TRC	15.35	15.14	1.3
29	1984	GM	Monte Carlo	3750	TRC	16.73	17.16	-2.5
30	1984	GM	Camaro	3625	TRC	19.14	18.54	3.2
31	1984	GM	Chevette	2625	TRC	15.90	13.37	18.9
32	1984	GM	Cavalier	2875	TRC	16.12	15.54	3.7
33	1984	Toyota	Corolla 2-dr.	2625	TRC	15.36	15.01 (3)	2.3
34	1984	GM	S Blazer(2WD)	3875	TRC	17.17	14.65 (4)	17.2
35	1984	GM	Celebrity	3250	TRC	16.47	15,66	5.2
36	1984	Honda	CRX	2000	TRC	15.48	15.46	0.1
37	1984	Ford	Crown Vic.	4250	TRC	16.56	15.49	6.91
38	1984	Ford	LTD	3500	TRC	18.12	16.35	11.08
					Ford		16.20	11.85
					GM		16.86	7.47
					GM		16.73	8.31
					TRC		15.93	13.75
					GM		17.24	5.10
					GM		17.17	5.53
39	1984	Ford	Marquis	3500	TRC	18.12	16.75	8.18
					Ford		16.24	12.13
					Ford		16.57	9.90
					Ford		16.38	11.11
					Ford		16.36	11.30

TABLE 2 (cont'd)
COASTDOWN TEST RESULTS

No.	Year	Manufacturer	Model	Inertia Wt. Class	(1) Location	Track Coastdown Time Application	Vehicle	(2) % Difference
40	1984	GM	Chevette	2625	GM	15.90	15.10	5.3
					GM		15.08	5.4
					TRC		14.80	7.43
					GM		15.36	3.5
					GM		15.20	4.6
41	1984	Ford	T-Bird	3625	TRC	19.14	18.20	5.16
42	1984	GM	S Blazer(2WD)	3875	GM	17.17	15.58 (4)	10.2
							16.86	
43	1984	GM	S Blazer(2WD)	3875	GM	17.17	15.81 (4)	8.6
							16.94	
44	1984	GM	Chevette	2625	GM	15.90	13.60	16.9
45	1984	GM	Chevette	2625	GM	15.90	13.84	14.9
46	1984	GM	Chevette	2625	GM	15.90	13.38	18.8
47	1984	GM	Chevette	2625	GM	15.90	13.04	21.9
48	1984	Ford	LTD	3500	Ford	18.12	16.142	12.01
49	1985	Ford	LTD	3625	HFL	18.52	15.809	17.15
50	1985	Ford	LTD	3625	HFL	18.52	16.055	15.35
51	1985	Ford	LTD	3625	HFL	18.52	16.274	13.80

NOTES:

1) TRC = Transportation Research Center, Marysville, Ohio
HFL = Ford's Homestead Florida Test Facility.
GM = General Motor's Proving Ground in Milford, MI
Ford = Ford's Michigan Proving Ground in Romeo, MI

(2) % Diff. = (Application Time/Vehicle Time - 1) x 100
(3) Tested at night with the head lights extended. Subsequent data from manufacturer indicated extended head lights yeild a 3.3 % shorter coastdown time.
(4) With roof rack and deflector.

TABLE 3

Preliminary Dynamometer Horsepower Settings

No.	Year	Manufacturer	Model	Inertia Wt. Class	Target Time	Dynamometer Horsepower Setting Location	Application	Vehicle	(2) % Diff.
38	1984	Ford	LTD	3500	16.14	FDB	7.9	8.63	10.63
39	1984	Ford	Marquis	3500	16.36	EPA	7.9	8.79	11.27
48	1984	Ford	LTD	3500	16.14	FDB	7.9	8.63	9.24
49	1985	Ford	LTD	3625	15.81	FDB	8.5	9.46	11.29
50	1985	Ford	LTD	3625	16.06	FDB	8.5	8.99	5.76
51	1985	Ford	LTD	3625	16.27	FDB	8.5	9.23	8.59

(1) EPA = Environmental Protection Agency's facilities in Ann Arbor, MI
FDB = Ford's facilities in Dearborn, MI

(2) % Diff =((Vehicle HP - Application HP)/Application HP) x 100